

DOCUMENT RESUME

ED 231 788

SP 022 648

AUTHOR Leary, Jim
TITLE The Effectiveness of Concerns-Based Staff Development in Facilitating Curriculum Implementation.
PUB DATE Mar 83
NOTE 49p.; Paper presented at the Annual Conference of the American Educational Research Association (Montreal, Canada, April 11-15, 1983). The research described was funded partially by the Frontier School District #48.
PUB TYPE Speeches/Conference Papers (150) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Curriculum Development; Curriculum Evaluation; Elementary Education; Elementary School Science; Foreign Countries; *Inservice Teacher Education; *Instructional Innovation; Needs Assessment; *Program Effectiveness; Program Implementation; *Staff Development; *Teacher Attitudes; Teacher Behavior
IDENTIFIERS Canada; *Concerns Based Adoption Model; *Levels of Use of the Innovation

ABSTRACT

Year one of a three-year curriculum implementation effort focused on facilitating curriculum implementation through diagnostic-prescriptive staff development guided by the concepts and tenets of the Concerns-Based Adoption Model. This curriculum implementation effort involved 12 kindergarten through sixth grade generalist teachers in an isolated Native elementary school in northern Canada. The curriculum innovation was a kindergarten through sixth grade provincial science curriculum. Various procedures and instruments used to assess Stages of Concern, Levels of Use, and Innovation Configuration are described, as is their specific use in assessing staff development needs. Also discussed are the evaluation of staff development efforts, and the assessment of the total effectiveness of the implementation effort. Among the conclusions reported is a finding that teacher Stages of Concern, Levels of Use of the Curriculum Innovation, and Configuration Use of the Innovation can be predictably influenced as a result of Concerns-Based Staff Development. (Author/JD)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED231788

THE EFFECTIVENESS OF CONCERNS-BASED STAFF DEVELOPMENT
IN FACILITATING CURRICULUM IMPLEMENTATION

JIM LEARY
FRONTIER SCHOOL DIVISION #48
WINNIPEG, MANITOBA
R3E 3G5
CANADA

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

✓ This document has been reproduced as
received from the person or organization
originating it.

Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official NIE
position or policy.

MARCH, 1983

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Jim Leary

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

Paper presented at the Annual Conference of the American
Education Research Association, Montreal, April 12, 1983.

SP 022 648

ABSTRACT

THE EFFECTIVENESS OF CONCERNS-BASED STAFF DEVELOPMENT IN FACILITATING CURRICULUM IMPLEMENTATION.^{1, 2, 3}

This paper reports year one of a three-year curriculum implementation effort, which has as its primary focus the facilitation of curriculum implementation through diagnostic-prescriptive staff development as guided by the concepts and tenets of the Concerns-Based Adoption Model. The various procedures and instruments used to assess Stages of Concern, Levels of Use and Innovation Configuration are described, as is their specific use in assessing staff development needs, the planning and delivery of relevant staff development activities, the evaluation of staff development efforts, and the assessment of the total effectiveness of the implementation effort. The curriculum implementation effort reported involves twelve Kindergarten to Grade 6 generalist teachers in an isolated Native elementary school in northern Canada. The curriculum innovation is a K-6 Provincial Science Curriculum. The primary objective of the study is to determine whether teacher Stages of Concern relative to a curriculum innovation, teacher Levels of Use of the innovation and Configuration of Use of the innovation can be predictably influenced through Concerns-Based Staff Development. Among the conclusions reported, is a finding that teacher Stages of Concern, Levels of Use of the Curriculum Innovation and Configuration of Use of the Innovation can be predictably influenced as a result of Concerns-Based Staff Development.

¹Special appreciation is expressed to Mr. Dave Smith, the Math/Science/Computer Consultant for the Frontier School Division, whose expertise in science education and staff development greatly affected the quality of in-service training which was planned and delivered as part of the research project.

²Appreciation is also expressed to the administrators and teachers of Berens River School, without whose interest, cooperation and professional attitudes this research could not have been conducted.

³The research herein described was funded partially by the Frontier School Division #48.

INTRODUCTION

One conclusion stands out clearly; many of the changes we have believed to be taking place in schooling have not been getting into classrooms; changes widely recommended for schools over the past fifteen years were blunted on the school and classroom door.

(Goodlad and Klein, 1970: 97)

What Goodlad and Klein observed to be the blunting of change or the lack of congruence between the intended and actual outcomes of curricular innovation has been the substance of a great deal of study since 1970. A variety of studies on this problem of unintended or unexpected curricular outcomes has resulted in the isolation of at least four accountable factors:

1. The conceptualization of change as an act rather than a process. This conceptualization assumes that change is essentially non-developmental in nature and therefore, can be accomplished by edict, (Hall and Loucks, 1979: 37);
2. The inadequate attention paid to staff concerns relative to the innovation and staff development during curriculum implementation. On-going, focused, people-based support during implementation has been identified as critical to successful implementation, (Berman and McLaughlin, 1978: Vol. 8, 34; Fullan and Pomfret, 1976: 82; Leithwood, et al., 1979: 53, Goodlad, 1975: 167, 177-184);
3. The lack of recognition of the importance and effect of the ecology of the school in implementation, (Berman and McLaughlin, 1978: Vol. 8, 34; Fullan and Pomfret, 1976: 68-73; Leithwood, et al., 1979: 56-60; Goodlad, 1975: 45,71);

4. The lack of clarity of the nature, scope and expectations of the innovation, (Berman and Mclaughlin, 1978: Vol. 8, 34; Fullan and Pomfret, 1976: 48-51; Leithwood, et al., 1979: 56-60; Goodlad, 1975: 45-71).

Without exception, the factors identified were evidenced during the implementation phase of the various curriculum projects studied and were seen as responsible for unexpected project outcomes.

One promising response to this problem of unexpected curricular outcomes, which addresses each of the factors identified as having a significant impact upon effective implementation, is the Concerns-Based Adoption Model (C.B.A.M.). Briefly, the Concerns-Based Adoption Model is a change model developed by Hall, Wallace and Dossette (1973) of the Research and Development Center for Teacher Education of the University of Texas at Austin, to represent the complex process entailed when educational institutions and individuals in them become involved in implementing innovations. The C.B.A.M. is a theoretical framework which links the activities of three subsystems—a resource system, a user system, and a facilitator system—in the diagnosis of user concerns about an innovation, typical behaviours of individuals involved in change, and an accurate description of the innovation being implemented. This diagnosis of user concerns, user behaviour, and the characteristics of the innovation provides the basis for the design of targeted or focused staff development as the means of facilitating curriculum implementation by reducing slippage.

This paper reports year one of a three-year curriculum implementation effort which has as its primary focus the facilitation of curriculum implementation through diagnostic-prescriptive staff development as guided by

the concepts and tenets of the Concerns-Based Adoption Model. Firstly, the Concerns-Based Adoption Model is presented and explained as are the procedures and instruments which are associated with the model. Secondly, a specific curriculum implementation project involving the implementation of the Manitoba Provincial K-6 Science Curriculum in Berens River School is described. Finally, the findings and conclusions drawn from the project are examined in terms of the usefulness of the C.B.A.M. in assessing staff development needs, planning and delivering staff development activities, evaluating staff development efforts and assessing the effectiveness of curriculum implementation efforts.

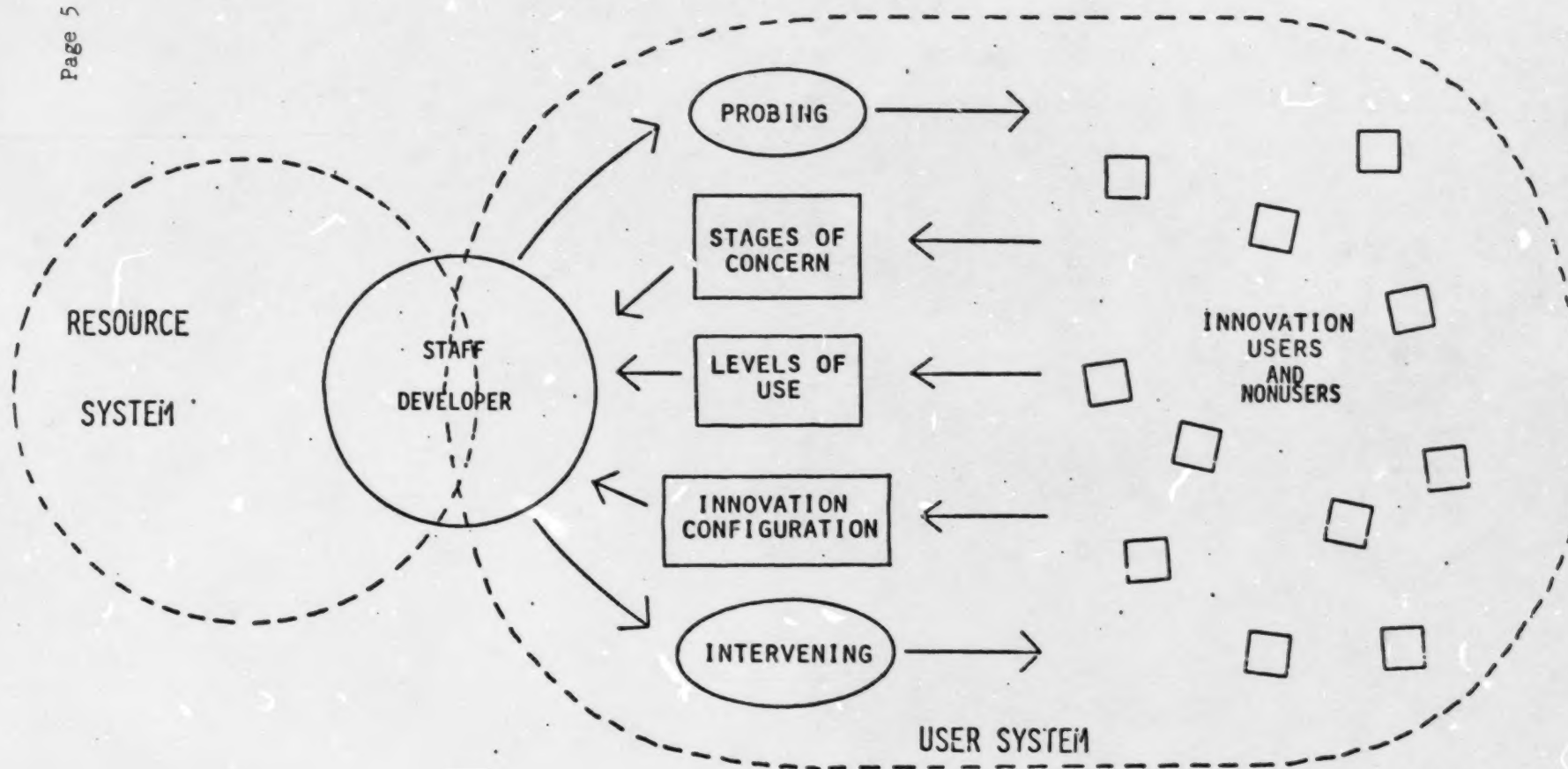
A DESCRIPTIVE OVERVIEW OF THE CONCERNS-BASED ADOPTION MODEL

Introduction

As mentioned, the Concerns-Based Adoption Model constitutes one practical response to the problem of slippage during curriculum implementation. The Concerns-Based Adoption Model was developed to represent the complex process entailed when educational institutions and the individuals in them become involved in implementing innovation, (Hall, Wallace and Dossett, 1973).

The Concerns-Based Adoption Model (Figure 1) consists of three systems: a User System, a Resource System and a Change Facilitator/Staff Developer System (Hall, Wallace and Dossett, 1973: 4). The User System is characterized by specific behaviours and attitudes relative to a particular innovation. These specific behaviours and attitudes are reflected in the Levels of Use (L.o.U.) of the Innovation and Stages of Concern (S.o.C.) about the innovation respectively. The various forms the innovation has taken within the

Figure 1: THE CONCERNS-BASED ADOPTION MODEL



CBAM Project
 Research and Development Center for Teacher Education
 The University of Texas at Austin

User System as a result of user adaptation of the innovation to local circumstances is described in terms of Innovation Configuration (I.C). The change facilitator/staff developer's role is to probe the User System to determine and monitor user and innovation characteristics, then link the User System with a Resource System via planned intervention. The probing functions are constituted of the measurement of the L.o.U. and S.o.C. of the User System and the determination of the Innovation Configuration(s) or variations of the innovations in use within the User System. The intervention function is constituted of staff development activities targeted by the S.o.C., L.o.U. and Innovation Configuration information.

It should be noted that all dimensions and various interactions in Figure 1 are meant to acknowledge that change is a process and that facilitating change entails continuous and systemic interactions (Heck, et al., 1981: 8).

Assumptive Basis of C.B.A.M.

There are several assumptions which underlie the C.B.A.M. as overviewed.

They are:

1. Change is a process occurring over time that is achieved incrementally and developmentally. It is not an event occurring at a single point in time. (Heck and Goldstein, 1980: 10)
2. The change process is not an undifferentiated continuum. Individuals involved in change go through stages in their perceptions, and feelings about the innovation, as well as their skill and sophistication in using the innovation. (Hall and Loucks, 1979: 38)
3. Change is a highly personal experience. The personal dimension of change is often more critical to the success or failure of the change process than either the organizational or technological dimensions. (Heck and Goldstein, 1980: 10) Since change is brought about by individuals, their personal satisfactions, frustrations, concerns, motivations and perceptions generally all play a part in determining the success or failure of a change initiative. (Hall, 1978: 4)

4. The individual is the focal point in the change process. Other approaches to change, (eg., organizational development) view the composite institution as the primary unit of intervention, and place their emphasis upon improving communication, and other organizational norms and behaviours. C.B.A.M., however, emphasizes working with individual teachers and administrators in relation to their roles in the innovation process. C.B.A.M. rests on the conviction that institutions cannot change until the individuals within them change. (Hall and Loucks, 1979: 38)
5. It is possible to acquire reliable and valid information about individual behaviours and concerns relative to an innovation. (Heck and Goldstein, 1980: 10)
6. It is possible to facilitate the change process by means of interventions targeted to the concerns and behaviours of individuals involved in the process. (Heck and Goldstein, 1980: 10)
7. The Change (innovation) is appropriate. Not all innovations are positive; an innovation that might be positive in one context may have a negative consequence in another context. Underlying the C.B.A.M. is the assumption that in a particular context the innovation that is being introduced is one that is judged to be positive and have potential for positive outcomes with the users and their clients. (Bents and Howey, 1981: 31)
8. The Staff developers and other change facilitators need to work in an adaptive yet systemic way. They need to stay in constant touch with the progress of individuals within the larger context of the total organization that is supporting the change. (Hall and Loucks, 1979: 39)
9. Inservice teacher training (Staff Development) can be best facilitated for the individual by use of a client-centered diagnostic/prescriptive model. To deliver relevant and supportive inservice teacher training, change facilitators need to diagnose where their clients are in the change process and target their interventions toward the diagnosed needs. (Hall, 1978: 4)
10. Full description of the intervention in operation is a key variable. All too often it appears that innovation developers have not clearly or fully developed operational definitions of their innovations ... There must be a full description of what the innovation entails when it is fully in use. (Hall, 1978: 4)

Some practical implications of these assumptions are obvious. Implementation efforts must be gradual, long term endeavors which focus firstly upon the people involved in the effort. The innovation itself must be clearly articulated and the people-based support provided as a part of the implementation process must be meaningful and planned in terms of addressing the changing, yet developmental, affective and behavioural reactions of individuals to the innovation. This people-based support must take place in the context of the organization supporting the change and by nature of its diagnostic/prescriptive nature can be easily evaluated.

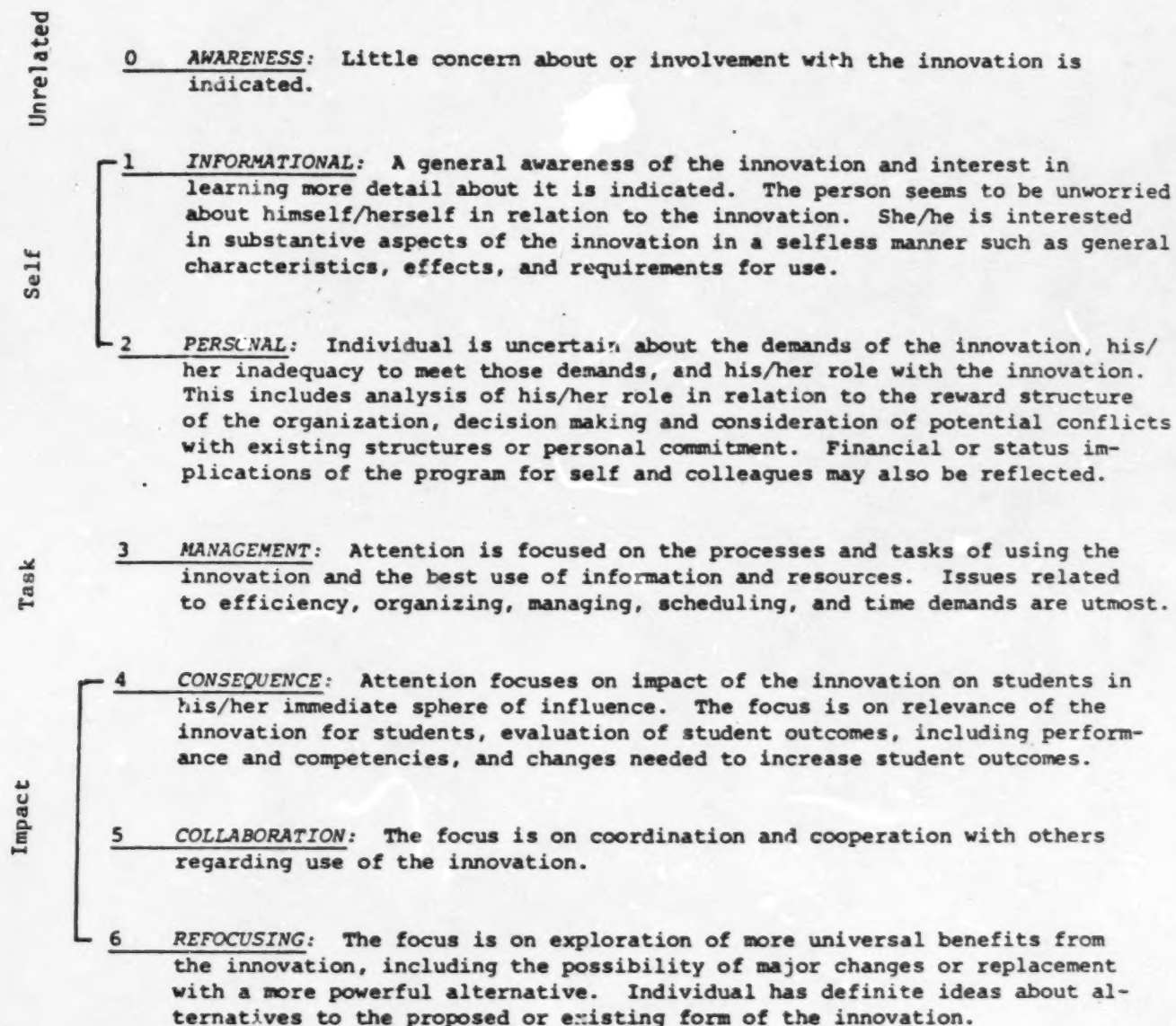
Stages of Concern About The Innovation

Stages of Concern, the affective dimension of the C.B.A.M., has been characterized in a seven stage developmental hierarchy (Figure 2) ranging from Unrelated Concerns (Stage 0) to Self Concerns (Stages 1 & 2) to Task Concerns (Stage 3) to Impact Concerns (Stages 4, 5 & 6). An individual normally does not have concerns relative to an innovation at just one stage. Although the concerns are spread across the stages, an individual usually does have a higher concentration of concerns at a particular stage as a function of familiarity and proficiency with the innovation. Using the S.o.C. Profile Graph (Hall, George, Rutherford, 1979), a profile of user concerns can be constructed to show clusters of concerns for the user system as a group.

The hypothesis that user stages of concern change in a developmental progression as users become more familiar with and skilled in using the innovation has been verified. (Loucks, 1980; Hall, 1977; Hall and George, undated) The instruments used to measure user Stages of Concern, the

Figure 2

STAGES OF CONCERN ABOUT THE INNOVATION*



*Original concept from Hall, G. E., Wallace, R. C., Jr., & Dossett, W. A. A developmental conceptualization of the adoption process within educational institutions. Austin: Research and Development Center for Teacher Education, The University of Texas, 1973.

Stages of Concern Questionnaire (S.o.C.Q.) (Hall, George, Rutherford, 1979) and the Open Ended Statement of Concern (Newlove and Hall, 1976: 17-21) have been validated and found reliable (Hall, George, Rutherford, 1979; George, 1977; Hall and George, undated).

Having reliably assessed the Stages of Concern of the user system and constructed individual and/or group concerns profiles it is possible to focus or target staff development interventions to the affective needs that users have relative to the innovation.

Levels of Use of the Innovation

The Levels of Use dimension of the C.B.A.M. focuses upon describing the behaviours of the user system. L.o.U. is a measure of various states of user behaviour in relation to the innovation. Eight Levels of Use (Figure 3) have been proposed and verified (Loucks 1976; Hall 1977; Loucks 1980; Rutherford and George 1978). A user progresses through the Levels of Use as familiarity and expertise with the innovation develops. Rutherford and George (1978) confirmed that a relationship existed between L.o.U. and S.o.C.; ie., a change in Levels of Use is anticipated by a change in Stages of Concern.

In order to organize, in a manageable fashion, the behaviours that may be exhibited at each Level of Use, a framework of indices or categories and decision points has been developed. The Level of Use Chart (Figure 4) in addition to defining eight Levels of Use further refines each level into seven categories. These categories represent the key functions that users carry out when using the innovation. There are specific decision points which distinguish each level of use. These decision points are also

Figure 3
Levels of Use of the Innovation

- 0 **NONUSE:** State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved.
- I **ORIENTATION:** State in which the user has recently acquired or is acquiring information about the innovation and/or has recently explored or is exploring its value orientation and its demands upon user and user system.
- II **PREPARATION:** State in which the user is preparing for first use of the innovation.
- III **MECHANICAL USE:** State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.
- IVA **ROUTINE:** State in which use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.
- IVB **REFINEMENT:** State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients.
- V **INTEGRATION:** State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.
- VI **RENEWAL:** State in which the user reevaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.

Excerpted from: The LoU Chart: Operational definitions of Levels of Use of the Innovation. Austin: Research and Development Center for Teacher Education, The University of Texas, 1975.

FIGURE 4—LoU CHART

LEVELS OF USE SCALE POINT DEFINITIONS OF THE LEVELS OF USE OF THE INNOVATION	CATEGORIES		
Levels of Use are distinct states that represent observable different types of behavior and patterns of innovation use as exhibited by individuals and groups. These levels characterize a user's development in acquiring new skills and varying use of the innovation. Each level encompasses a range of behaviors, but is limited by a set of identifiable Decision Points. For descriptive purposes, each level is defined by seven categories.	KNOWLEDGE	ACQUIRING INFORMATION	SHARING
LEVEL 0 NON-USE: State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved.	That which the user knows about characteristics of the innovation, how to use it, and consequences of its use. This is cognitive knowledge related to using the innovation, not feelings or attitudes.	Solicits information about the innovation in a variety of ways, including questioning resource persons, corresponding with resource agencies, reviewing printed materials, and making visits.	Discusses the innovation with others. Shares plans, ideas, resources, outcomes, and problems related to use of the innovation.
DECISION POINT A	Takes action to learn more detailed information about the innovation.		
LEVEL 1 ORIENTATION: State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands upon user and user system.	Knows general information about the innovation such as origin, characteristics, and implementation requirements.	Seeks descriptive material about the innovation. Seeks opinions and knowledge of others through discussions, visits, or workshops.	Discusses the innovation in general terms and/or exchanges descriptive information, materials, or ideas about the innovation and possible implications of its use.
DECISION POINT B	Makes a decision to use the innovation by establishing a time to begin.		
LEVEL 2 PREPARATION: State in which the user is preparing for first use of the innovation.	Knows logistical requirements, necessary resources and timing for initial use of the innovation, and details of initial experiences for clients.	Seeks information and resources specifically related to preparation for use of the innovation in own setting.	Discusses resources needed for initial use of the innovation. Joins others in pre-use training, and in planning for resources, logistics, schedules, etc., in preparation for first use.
DECISION POINT C	Begins first use of the innovation.		
LEVEL 3 MECHANICAL USE: State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.	Knows on a day-to-day basis the requirements for using the innovation. Is more knowledgeable on short-term activities and effects than long-range activities and effects of use of the innovation.	Solicits management information about such things as logistics, scheduling techniques and ideas for reducing amount of time and work required of user.	Discusses management and logistical issues related to use of the innovation. Resources and materials are shared for purposes of reducing management, flow and logistical problems related to use of the innovation.
DECISION POINT D-1	A routine pattern of use is established.		
LEVEL 4 A ROUTINE: Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.	Knows both short- and long-term requirements for use and how to use the innovation with minimum effort or stress.	Makes no special efforts to seek information as a part of ongoing use of the innovation.	Describes current use of the innovation with little or no reference to ways of changing use.
DECISION POINT D-2	Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes.		
LEVEL 4 B REFINEMENT: State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short and long-term consequences for clients.	Knows cognitive and affective effects of the innovation on clients and ways for increasing impact on clients.	Solicits information and materials that focus specifically on changing use of the innovation to affect client outcomes.	Discusses own methods of modifying use of the innovation to change client outcomes.
DECISION POINT E	Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing.		
LEVEL 5 INTEGRATION: State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.	Knows how to coordinate own use of the innovation with colleagues to provide a collective impact on clients.	Solicits information and opinions for the purpose of collaborating with others in use of the innovation.	Discusses efforts to increase client impact through collaboration with others on personal use of the innovation.
DECISION POINT F	Begins exploring alternatives to or major modifications of the innovation presently in use.		
LEVEL 6 RENEWAL: State in which the user re-evaluates the quality of use of the innovation, seeks major modifications or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.	Knows of alternatives that could be used to change or replace the present innovation that would improve the quality of outcomes of its use.	Seeks information and materials about other innovations as alternatives to the present innovation or for making major adaptations in the innovation.	Focuses discussions on identification of major alternatives or replacements for the current innovation.

Procedures for Adopting Educational Innovations Project, Research and Development Center for Teacher Education, University of Texas at Austin, 1975, N.I.E. Contract No. N-E-C-74-0087.

FIGURE 4—LoU CHART

CATEGORIES			
ASSESSING	PLANNING	STATUS REPORTING	PERFORMING
Examines the potential or actual use of the innovation or some aspect of it. This can be a mental assessment or can involve actual collection and analysis of data.	Designs and outlines short- and/or long-range steps to be taken during process of innovation adoption, i.e., assigns resources, schedules activities, meets with others to organize and/or coordinate use of the innovation.	Describes personal stand at the present time in relation to use of the innovation.	Carries out the actions and activities entailed in operationalizing the innovation.
Takes no action to analyze the innovation, its characteristics, possible use, or consequences of use.	Schedules no time and specifies no steps for the study or use of the innovation.	Reports little or no personal involvement with the innovation.	Takes no discernible action toward learning about or using the innovation. The innovation and/or its accoutrements are not present or in use.
Analyzes and compares materials, content, requirements for use, evaluation reports, potential outcomes, strengths and weaknesses for purpose of making a decision about use of the innovation.	Plans to gather necessary information and resources as needed to make a decision for or against use of the innovation.	Reports presently orienting self to what the innovation is and is not.	Explores the innovation and requirements for its use by talking to others about it, reviewing descriptive information and sample materials, attending orientation sessions, and observing others using it.
Analyzes detailed requirements and available resources for initial use of the innovation.	Identifies steps and procedures entailed in obtaining resources and organizing activities and events for initial use of the innovation.	Reports preparing self for initial use of the innovation.	Studies reference materials in depth, organizes resources and logistics, schedules and receives skill training in preparation for initial use.
Examines own use of the innovation with respect to problems of logistics, management, time, schedules, resources, and general reactions of clients.	Plans for organizing and managing resources, activities, and events related primarily to immediate ongoing use of the innovation. Planned-for changes address managerial or logistical issues with a short-term perspective.	Reports that logistics, time, management, resource organization, etc., are the focus of most personal efforts to use the innovation.	Manages innovation with varying degrees of efficiency. Often lacks anticipation of immediate consequences. The flow of actions in the user and clients is often disjointed, uneven and uncertain. When changes are made, they are primarily in response to logistical and organizational problems.
Limits evaluation activities to those administratively required with little attention paid to findings for the purpose of changing use.	Plans intermediate and long-range actions with little projected variation in how the innovation will be used. Planning focuses on routine use of resources, personnel, etc.	Reports that personal use of the innovation is going along satisfactorily with few if any problems.	Uses the innovation smoothly with minimal management problems; over time, there is little variation in pattern of use.
Assesses use of the innovation for the purpose of changing current practices to improve client outcomes.	Develops intermediate and long-range plans that anticipate possible and needed steps, resources, and events designed to enhance client outcomes.	Reports varying use of the innovation in order to change client outcomes.	Explores and experiments with alternative combinations of the innovation with existing practices to maximize client involvement and to optimize client outcomes.
Appraises collaborative use of the innovation in terms of client outcomes and strengths and weaknesses of the integrated effort.	Plans specific actions to coordinate own use of the innovation with others to achieve increased impact on clients.	Reports spending time and energy collaborating with others about integrating own use of the innovation.	Collaborates with others in use of the innovation as a means for expanding the innovation's impact on clients. Changes in use are made in coordination with others.
Analyzes advantages and disadvantages of major modifications or alternatives to the present innovation.	Plans activities that involve pursuit of alternatives to enhance or replace the innovation.	Reports considering major modifications of or alternatives to present use of the innovation.	Explores other innovations that could be used in combination with or in place of the present innovation in an attempt to develop more effective means of achieving client outcomes.

identified on the L.o.U. Chart. An overall L.o.U. is assigned to an individual based on the individual's passage of these decision points. It should be noted that individuals may exhibit certain behaviours which are of different levels in different categories. As an example, an individual may have crossed decision point B and be assigned an overall L.o.U. II by establishing a specific date to begin use of the innovation, yet exhibit behaviours in the categories which are typically level 0 or level 1. Generally, individual behaviours within each category are clustered around the overall L.o.U.

Having assessed user system L.o.U., interventions may be focused or targeted to the requirements of individuals at particular levels. It should be noted that L.o.U. unlike the S.o.C. does not change rapidly. Although a change in concern may be indicative of a change in L.o.U. a time cannot be specified for this change.

The method of assessing the L.o.U. is the focused L.o.U. interview (Loucks, Newlove and Hall, 1975: 24-27). The results of the L.o.U. interview are recorded by the researcher on a L.o.U. Rating Sheet (Loucks, Newlove and Hall, 1975: 42). The L.o.U. interview has been validated and found reliable (Loucks 1976: 5; Fullan and Pomfret 1976: 30).

Innovation Descriptive and Innovation Configuration

Neither S.o.C. nor L.o.U. assists in the specification of the "what" of the innovation. Implementation studies have revealed that the operational characteristics of any given curriculum innovation vary from classroom to classroom.

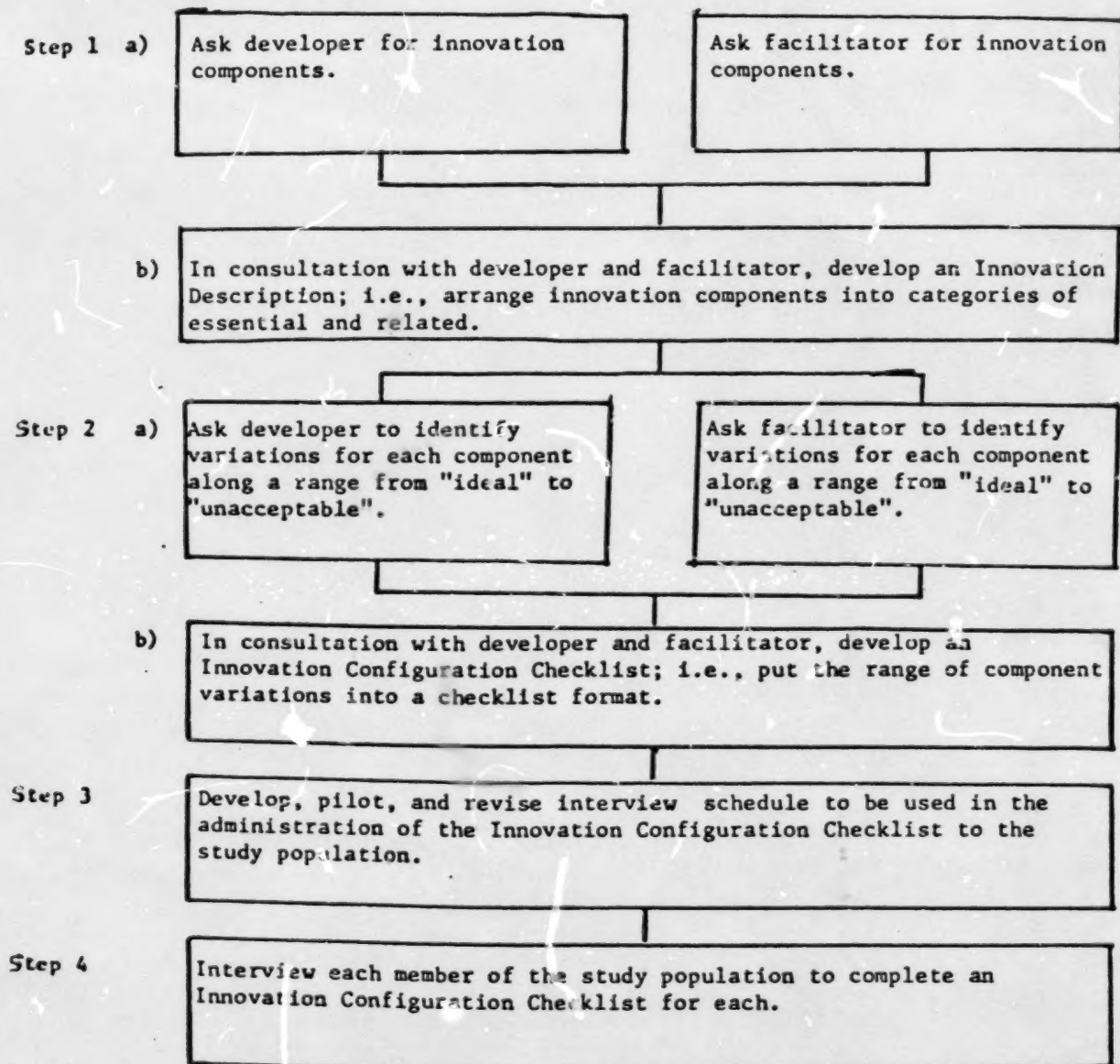
Field research with the C.B.A.M. (Hall and Loucks, 1978) conducted by the Research and Development Center for Teacher Education in Austin, identified the need to define minimum criteria for use in the form of an innovation description in order to determine whether members within a user system were indeed users of the same innovation. It became obvious that a range of acceptable operational forms of the innovation was required to accommodate the adaptive and heuristic nature of change. This range of variations emerged in the form of an Innovation Configuration Checklist. The Checklist is used to identify the adaptations that an innovation undergoes during implementation in a given situation. The Checklist is completed for each individual in the user system during a focused Innovation Configuration Interview.

Normally, the Innovation Description and the Innovation Configuration Checklist are developed in a five-step process (Heck, et al., 1981: 26-34) and may be constructed with either prescription or description of an innovation in mind. For the purposes of this study, a modified four-step procedure (Figure 5) was employed to identify the Innovation Configuration: Manitoba Provincial K-6 Science Curriculum (App. A), and the Innovation Configuration Checklist: Manitoba Provincial K-6 Science Curriculum (App. B).

Having used the Innovation Configuration Checklist during a focused interview to identify the various forms or configurations an innovation has taken within the user system, staff development interventions into the user system may be focused by the requirements of individuals or groups of individuals using particular configurations of the innovation.

Figure 5

A Procedure for Identifying Innovation Descriptions and Innovation Configurations.



Summary

The Concerns-Based Adoption Model is comprised of the basic concepts of Stages of Concern, Levels of Use and Innovation Configuration. The Stages of Concern about an innovation is the developmental hierarchy of concerns in seven stages which describes the kinds of concerns the individual may experience over time in relation to an innovation. The Levels of Use of an innovation is an eight level developmental hierarchy of behaviours which describes the type of behaviours individuals exhibit over time in relation to the innovation. The Innovation Configuration is the operational pattern of the innovation that results from user selection and use of different innovation component variations. The Innovation Configuration is a description of the various adaptations the innovation has made within the user system.

Interventions into the user system; i.e., the linking of the user system with a resource system, may be designed in response to the needs of individuals within the user system diagnosed in terms of their concerns about the innovation, their usage of the innovation and the various adaptations or configurations they have given to the innovation.

THE MANITOBA K-6 PROVINCIAL SCIENCE CURRICULUM IMPLEMENTATION PROJECT IN BERENS RIVER SCHOOL

The Research Question

Generally, the purpose of this study was to field test aspects of the Concerns-Based Adoption Model in a Manitoba School. More specifically, the study involved the implementation of the Manitoba Provincial K-6 Science Curriculum in Berens River School of the Frontier School Division and was

concerned with the design and execution of staff development intervention in support of the implementation. The major questions for investigation were:

1. Will staff development focused by Stages of Concern, Levels of Use and Innovation Configuration data predictably affect User Stages of Concern, Levels Of Use and Innovation Configuration?
2. Can the Concerns-Based Adoption Model be used to evaluate the effectiveness of the curriculum implementation?
3. Can the Concerns-Based Adoption Model be used to evaluate staff development efforts in support of curriculum implementation?

The Setting of the Study

The study was conducted at Berens River School in Berens River, Manitoba. Berens River School is in Administrative Area III of the Frontier School Division No. 48. The study population consisted of twelve K-6 Science teachers. The student population was Native Canadian with Saulteaux as a first language and English as a second language. The student population was approximately 285 at the Kindergarten to Grade 6 Levels.

The Innovation

Science instruction had been identified by the principal and staff as a "weakness". It was unknown at the beginning of the study by either the principal or staff what variety of science programs existed in the school. The principal and staff expressed a desire to put science instruction "in order" in accordance with the Manitoba Provincial K-6 Science Curriculum Guidelines. The innovation for implementation became the Manitoba Provincial K-6 Science Curriculum.

Methodology/Procedure

The study time/task line (Figure 6) outlines the specific steps taken during the project. As previously indicated, all procedures and instruments used in the collection of Stages of Concern, Levels of Use, and Innovation Configuration data were prescribed by the C.B.A.M. project of the Research and Development Center for Teacher Education at the University of Texas at Austin.

The project had a pre/post design in which teacher concerns relative to the Curriculum were measured twice before staff development and twice after staff development; whereas, the Innovation Configuration and the Levels of Use of the curriculum were measured once before staff development and once after staff development. The pre/post design was set up in such a way so as to allow for the measurement of the changes in teacher concerns as a function of time as well as a function of staff development.

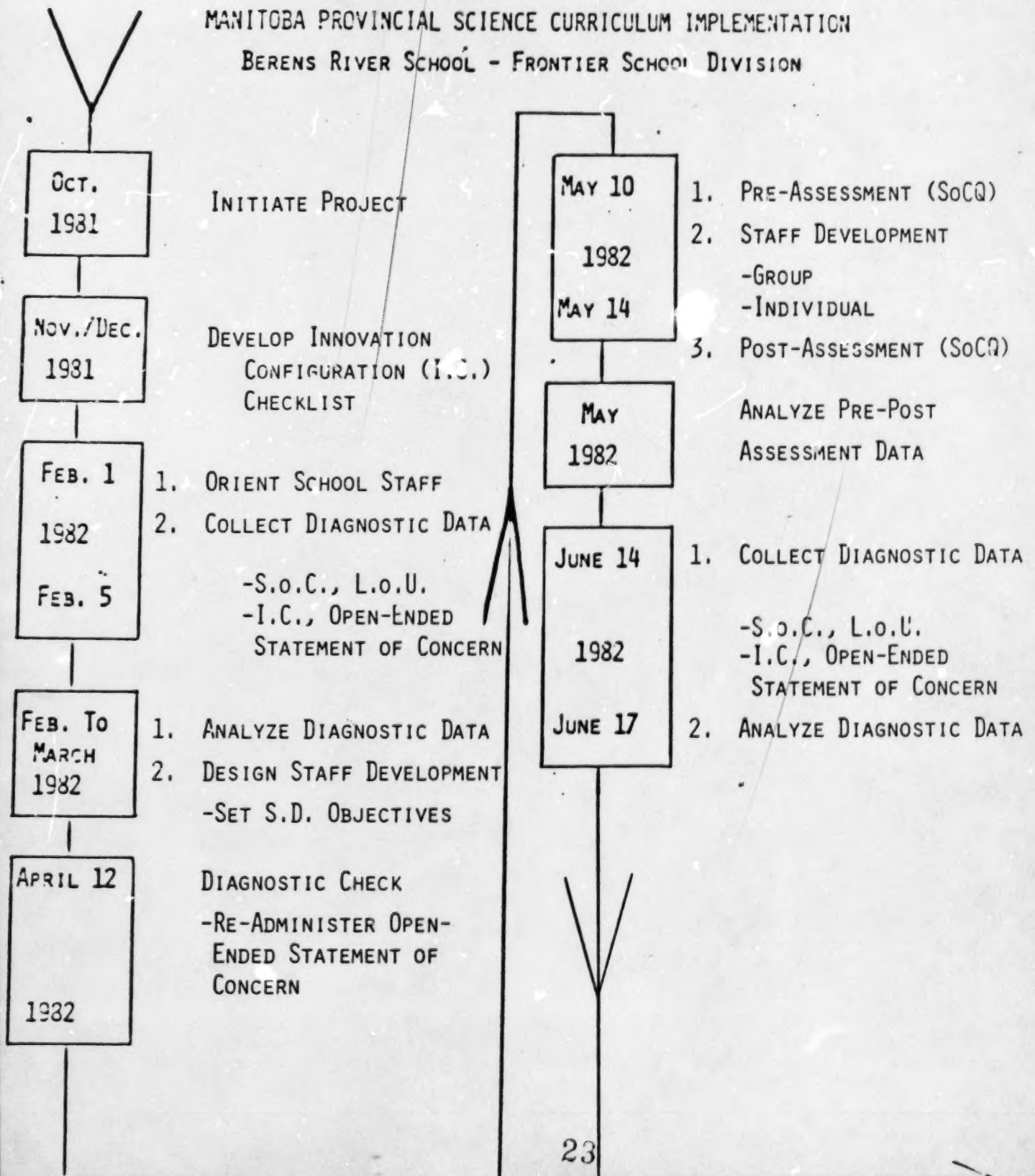
The project was initiated in October, 1981, as a result of discussions with the Superintendent, Principal and Staff. In November and December, 1981, an operational description of the essential nature of the Manitoba Provincial K-6 Science Curriculum was developed. This operational description took the forms of the Innovation Description: Manitoba Provincial K-6 Science Curriculum (App. A), which would form the basis of the Levels of Use Interview to be conducted with each science teacher and the Innovation Configuration Checklist: Manitoba Provincial K-6 Science Curriculum (App. B) which would be administered and completed for each science teacher in the study during a separately scheduled interview focused by a researcher prepared interview schedule (App. C).

During the February 1st to 5th interval, Stages of Concern, Levels of Use and Innovation Configuration data were collected from the K-6 Staff at

STUDY TIME/TASK LINE

MANITOBA PROVINCIAL SCIENCE CURRICULUM IMPLEMENTATION

BERENS RIVER SCHOOL - FRONTIER SCHOOL DIVISION



Berens River School using the Stages of Concern Questionnaire, Open Ended Statement of Concern, Levels of Use Interview and the Innovation Configuration Interview. During February and March, the data were analyzed and staff development objectives set. In mid April, Stages of Concern data were again collected using only the Open Ended Statement of Concern to note any changes in teacher concerns since February, which should be reflected in changes in the staff development plan. The week of May 10 to 14, was set as a formal staff development week, consisting of a one-day large group in-service session and four days of small group and individual consultation sessions. The S.o.C.Q. was administered on May 10, prior to the beginning of staff development activities and again on May 14, at the conclusion of the staff development activities.

Between June 14 and 17, Stages of Concern, Levels of Use and Innovation Configuration data were collected using the S.o.C.Q., Open Ended Statement of Concern, Levels of Use Interview and Innovation Configuration Interview. The data were analyzed to note changes in staff Stages of Concern, Levels of Use and Innovation Configuration since February.

Chart One summarizes the aggregated changes in Stages of Concern for the study group.¹ Chart Two summarizes the aggregated changes in the Open Ended Statement of Concern for the group. Chart Three summarizes the changes in Levels of Use while Chart Four² summarizes the changes in the Innovation Configuration for the study group.

¹ Although the study group consisted of 12 teachers, only 8 are reported on the S.o.C.Q. profile since 4 of the 12 teachers did not complete all 4 S.o.C.Q.'s required as part of the data collection.

² Although the study group consisted of 12 teachers, only 9 are reported on the Innovation Configuration Data Summary since 3 of the 12 teachers were not available for both Innovation Configuration Interviews as required as part of the data collection.

Stages of Concern Questionnaire data collected in February, 1982 (Chart One) indicated that stages of informational, personal, and management concerns were much higher in intensity than stages of consequence, collaboration, and refocusing concerns. This profile is typical of a group of individuals new to an innovation with limited information about the innovation and its concomitant expectations, who are primarily wondering how the innovation is going to affect them. Open Ended Statement of Concerns data (Chart Two) revealed group informational concerns about the demands or expectations of the innovation; personal concerns about individual abilities to make the innovation relevant; and management concerns centering around the availability and organization of resources. Levels of Use data (Chart Three) collected at the same time revealed that 5 of the 12 science teachers were not using the Manitoba Provincial K-6 Science Curriculum.

The Innovation Configuration data (Chart Four) for February 5, 1982, revealed that all individuals had wide ranging variations of practice for each component of the curriculum, many of which were identified on the Innovation Configuration Checklist as being unacceptable within the scope of the curriculum. The 12 innovation configuration components that are the essential features of the Manitoba Provincial K-6 Science Curriculum are identified on the chart in the columns while each subject teacher is identified in each row by a letter. Where row and column intersect a number appears. This number corresponds to the component variation on the Innovation Configuration Checklist (App. B) which the subject teacher related, during the Innovation Configuration Checklist interview, (App. C) as characteristic of his/her practice. A circled number indicates a component variation which is out-

STAGES OF CONCERN PROFILE

— Feb. 5, 1982
--- May 10, 1982
- - - May 14, 1982
... June 15, 1982

I.D. N-8
SITE Berens River School

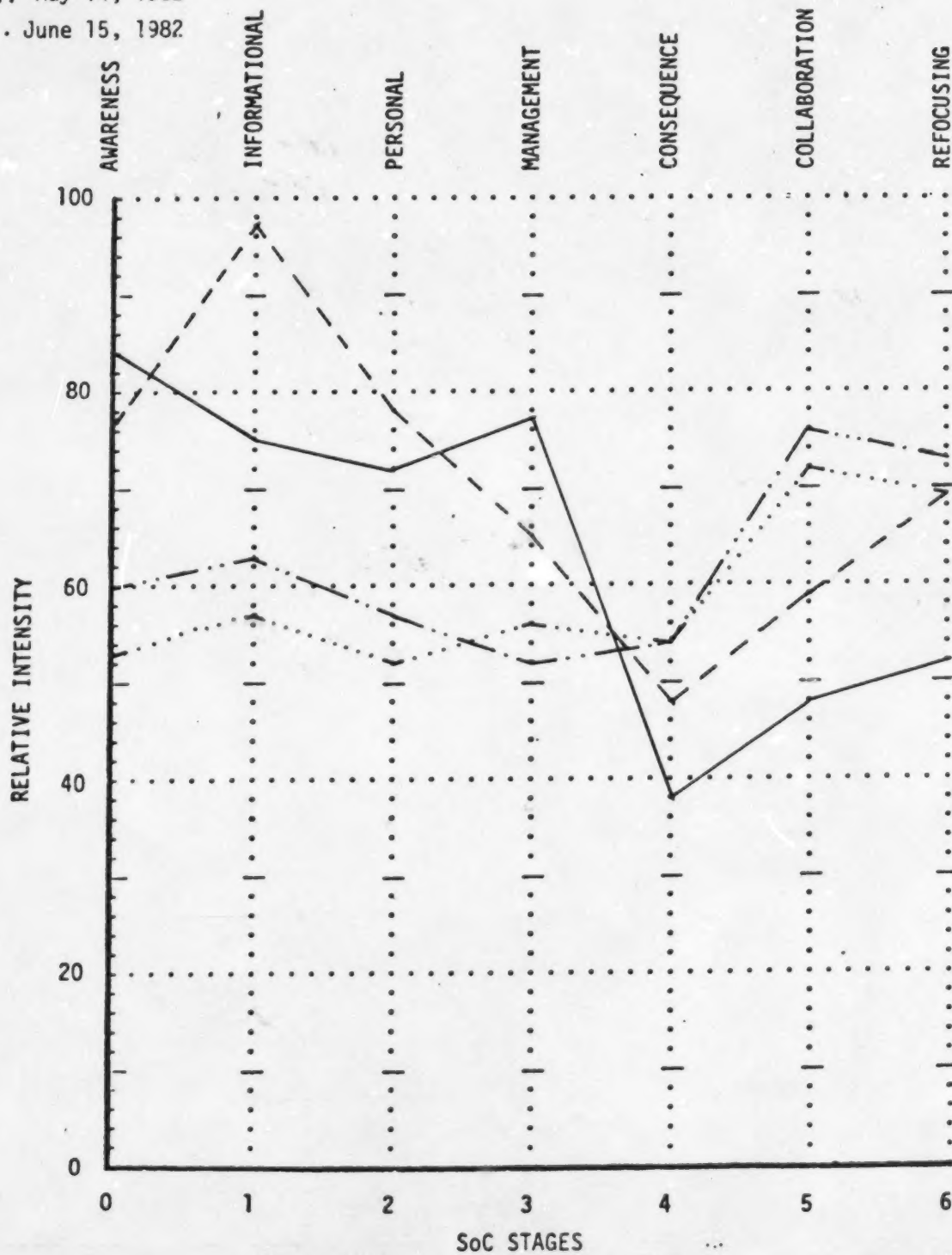


Chart Two

OPEN ENDED STATEMENT OF CONCERN
GROUP SUMMARY

February 5, 1982 and April 12, 1982

1. Informational Concerns

Sample Comments: -How much of the guide do I have to teach?

-What am I supposed to teach?

2. Personal Concerns

Sample Comments: -Can I still use my textbooks?

-How can I make Science interesting?

-Am I teaching correctly?

3. Management Concerns

Sample Comments: -Resources are not available.

-Resources are not organized.

June 15, 1982

1. Consequence Concerns

Sample Comments: -I can see the positive effects of the program and I want to increase these effects.

2. Collaboration Concerns

Sample Comments: -I think if we got together as a group of teachers, we could improve the program by sharing our ideas.

Chart Three

LEVELS OF USE

DATA SUMMARY

Teacher	Classification of Use	
A	User	User
B	User	User
C	Non-User	User
D	Non-User	User
E	User	User
F	User	User
G	Non-User	User
H	User	User
I*	Non-User	*Non-User
J	Non-User	Non-User
K*	User	*Non-User
L	User	User
	7 Users and 5 Non-Users of the Manitoba Provincial K-6 Science Curriculum	9 Users and 3 Non-Users of the Manitoba Provincial K-6 Science Curriculum

February 5, 1982June 15, 1982

*The asterisk identifies those individuals who in June, 1982, were classified as Non-users of the curriculum since they no longer taught science as a result of a change in their teaching assignments.

INNOVATION CONFIGURATION DATA SUMMARY

TEACHER		INNOVATION CONFIGURATION																			
		February 5, 1982										June 15, 1982									
A		1	4	3	2	1	2	2	3	2	1	2	3								
B		2	1	2	1	2	2	3	1	1	3	2	4								3
C		4	1	2	1	4	4	1	2	1	2	1	2								
D		3	1	1	1	2	6	1	1	1	2	1	2								
E		5	2	2	1	4	4	1	4	5	5	1	2								
F		4	1	2	2	4	4	1	1	1	2	1	2								
G		3	1	2	1	5	3	1	1	1	2	1	2								
H		4	1	2	1	1	4	1	1	1	3	1	2								
I*																					
J*																					
K		4	2	2	3	5	6	2	2	1	3	1	1								
L*																					
		✓			✓	✓			✓												
INNOVATION COMPONENTS																					
PLANNING MATERIALS																					
INSTRUCTIONAL MATERIALS																					
INSTRUCTIONAL PLANNING																					
SCHEDULING																					
INSTRUCTIONAL CONTENT																					
INSTRUCTIONAL OBJECTIVES																					
STUDENT ACTIVITY																					
EVALUATION METHODS																					
EVALUATION FREQUENCY																					
EVALUATION CONTENT																					
INSTRUCTIONAL TECHNIQUES																					
INTERACTION TECHNIQUES																					

○ = Unacceptable component variations of individuals

✓ = Unacceptable component variations of the group as a whole

* = Although the study group consisted of 12 teachers, only 9 are reported on the Innovation Configuration Data Summary since 3 of the 12 teachers were not available for both Innovation Configuration Interviews as required as a part of the data collection.

side the scope of the curriculum. As a group, unacceptable variations were evidenced in 4 of the 12 components identified as critical to the Innovation. These 4 critical elements in which variations were unacceptable are noted by a check mark (✓) on Chart Four.

Based on the Stages of Concern, Levels of Use and Innovation Configuration data analyzed, staff development goals were struck. The goals identified were firstly, to facilitate the use of the Manitoba Provincial K-6 Science Curriculum by all non-users in the study group; secondly, to encourage component variations identified as being within the scope of the Manitoba Provincial K-6 Curriculum; and thirdly, to identify and address the high informational, personal and management concerns of the study group in relation to the Manitoba Provincial K-6 Science Curriculum.

Staff development activities were set for the week of May 10 to 14, which were suited to the Stages of Concern of individuals and the group, designed to facilitate the movement toward usage of the curriculum and increase teaching practices within the acceptable range of component variations for the curriculum. The Open Ended Statement of Concern data (Chart Two) collected on April 12, confirmed that individuals and the group as a whole expressed the same concerns as they did in February.

The S.o.C.Q. data collected on May 10, just prior to the staff development week, differed in one significant way from the February data. This one significant difference was the increased intensity of informational concerns in the May 10 reading. This change can be explained in terms of the group's heightened anticipation of the large group in-service session of May 10, which was designed to provide program information and expectations.

S.o.C.Q. data collected on May 14, after the staff development week, revealed significant changes in the intensity and distribution of concerns. The May 14 data showed a greatly reduced intensity of informational, personal and management concerns and an increased intensity of consequence and collaboration concerns. The teachers' informational, personal, and management concerns had been addressed. In addition; however, the teachers' concerns above the impact of the program upon students and the need of teachers to work together to improve the program had heightened.

It is interesting to note that refocusing concerns "tailed down" on May 14, while they "tailed up" on February 5 and May 10. Since refocusing concerns are the last to be represented on the S.o.C. profile chart, they constitute the "tail" of the graph. A "tailing up" occurs when refocusing concerns register as a peak on the profile. A "tailing down" occurs when refocusing concerns register as a valley on the profile. A relatively high intensity of refocusing concerns, whether it be a peak or a valley, indicates a general disposition to looking outside or beyond the innovation at hand. However, when refocusing concerns are peaked, ie., showing a relative intensity of concern higher than that for collaboration concerns, and are coupled with high personal and management concerns there is an indication that a sense of personal insecurity and frustration with day-to-day management of the innovation is resulting in a desire to seek an alternative to the innovation. Such was the interpretation of the "tailed up" refocusing concerns of the February 5 and May 10 profiles. When

relatively intense refocusing concerns which register as a valley are coupled with intense collaboration or consequence concerns, there is an indication that a need to work with colleagues to improve innovation outcomes is resulting in a desire to look beyond the innovation or to improve the innovation. Such was the interpretation of the slightly "tailed down" refocusing concerns of the May 14 profile.

This change in the "tailing" of the refocusing concerns can be explained in that the group as a result of in-service training was less prone to look outside the innovation for resolution of personal and management concerns but was still very open to new innovations or changes to the existing innovation which would result in increased collegial collaboration for client benefit.

The S.o.C.Q. data collected during the week of June 10 to 15, revealed a profile of Stages of Concern almost identical to the profile displayed on May 14 while the Open Ended Statement of Concern collected on June 15, contrasted sharply with the February and April data. In June, through the Open Ended Statement of Concern, the group expressed concerns related to the effects of teaching and the program upon children and the need to collaborate or share ideas with each other for the purpose of improving instructional impact, while the Open Ended Concerns Statements of February were primarily of the informational, personal and management nature.

The Innovation Configuration data collected in June contrasted drastically from the data collected in February. For the most part, all component variations identified in February as unacceptable had moved into the acceptable range by June. The one major exception to this trend was teacher "J" who remained a non-user of the program. But even in this case, some positive changes in the Innovation Configuration were evidenced.

In summary, the data revealed little change in S.o.C.Q. between February 5 and May 10 when no planned staff development activity took place; significant changes in S.o.C.Q. between May 10 and May 14, coincidental with intensive staff development activity and little change in S.o.C.Q. between May 14 and June 15, again when no staff development was planned. The Levels of Use data showed a net decrease in the number of non-users of the Manitoba Provincial K-6 Curriculum from 5 in February to 3 in June, with 2 of the non-users in June being classified as such because they no longer taught science as a result of changes in teaching assignment unrelated to the project. The Innovation Configuration data revealed dramatic changes from unacceptable component variations to acceptable component variations between February 15 and June 15 for all teachers.

Conclusions and Implications

The research questions which focused the study were:

1. Will staff development, targeted by Stages of Concern, Levels of Use and Innovation Configuration data, predictably affect user Stages of Concern, Levels of Use and Innovation Configuration?
2. Can the Concerns-Based Adoption Model be used to evaluate the effectiveness of the curriculum implementation effort?
3. Can the Concerns-Based Adoption Model be used to evaluate the staff development efforts in support of curriculum implementation?

It was concluded that staff development targeted by Stages of Concern, Levels of Use and Innovation Configuration data can predictably affect user Stages of Concern, Levels of Use and Innovation Configuration. It was also concluded that user Stages of Concern did not change as a function of time, but did change as a function of staff development.

Although not conclusively proven by the study, the following statements were strongly implied and require additional study:

1. The curriculum implementation process can be monitored and evaluated in terms of changing user Stages of Concern, Levels of Use, and Innovation Configuration.
2. Staff development efforts can be evaluated in terms of user changes in Stages of Concern, Levels of Use and Innovation Configuration.

Summary and Conclusion

The unexpected outcomes of curriculum implementation; that is, the lack of expected change within the school as a result of curriculum implementation efforts has focused attention upon the curriculum implementation process specifically and the change process generally. At least four factors were identified during the implementation phase of curriculum projects as being accountable for the lack of anticipated outcomes. These factors were in review:

1. The conceptualization of change as an act rather than a process.
2. The inadequate attention paid to staff concerns relative to the innovation and staff development during implementation.
3. The lack of recognition of the importance and effect of the ecology of the school in implementation efforts.
4. The lack of clarity of the nature, scope and expectations of the innovation.

The questions related to the interrelationship of these factors and their combined effect upon the implementation process has resulted in a greater focus of attention upon studies attempting to identify means by

which the effectiveness of implementation and staff development activities may be evaluated.

The Concerns-Based Adoption Model has proven to be a very powerful conceptualization of the change process in that it recognizes each of the above identified factors and allows for their conceptual and practical manipulation in the planning and evaluation of implementation efforts. The Concerns-Based Adoption Model has provided the theoretical framework for the Manitoba Provincial K-6 Science Curriculum Implementation effort in Berens River School. The effort has been deemed successful in that the implementation effort has resulted in expected outcomes both in terms of program implementation and staff development.

B I B L I O G R A P H Y

- BENT, Richard H., and Howey, Kenneth R. "Staff Development Change in the Individual." In Staff Development/Organization Development, pp. 11-36. Edited by Betty Dillan-Peterson. Alexandria, Va.: A.S.C.D., 1981.
- BERMAN, Paul, and McLaughlin, Milbrey Wallin. Federal Programs Supporting Educational Change, Vol. 1: A Model of Educational Change. Santa Monica: Rand, 1974.
- FULLAN, Michael, and Pomfret, Alan. Review of Research on Curriculum and Instruction Implementation. IE-P-74-0122. National Institute for Education, Career Education Program, 1976.
- GEORGE, Archie. Development and Validation of a Concerns Questionnaire. Austin: Research and Development Center for Teacher Education, University of Texas, 1977.
- GOODLAD, John I. The Dynamics of Educational Change. New York: McGraw Hill Book Co., 1975.
- GOODLAD, John I.; Klein, Frances M.; and Associates. Behind the Classroom Door. Worthington, Ohio: Charles A. Jones, 1970.
- HALL, Gene E. A Longitudinal Investigation of the Individual Implementation of Educational Innovations. Austin: Research and Development Center for Teacher Education, University of Texas, 1977.
- HALL, Gene E. Concerns-Based Inservice Teacher Training: An Overview of the Concepts, Research and Practice. Austin: Research and Development Center for Teacher Education, University of Texas, 1978.
- HALL, Gene E., and George, Archie. Stages of Concern About the Innovation: The Concept, Initial Verification and Some Implications. Austin: Research and Development Center for Teacher Education, University of Texas, undated.
- HALL, Gene E.; George, Archie; and Rutherford, William C. Measuring Stages of Concern About the Innovation: A Manual for the Use of the S.O.C. Questionnaire. Austin: Research and Development Center for Teacher Education, University of Texas, 1979.

B I B L I O G R A P H Y

- HALL, Gene E., and Loucks, Susan F. Innovation Configurations: Analyzing the Adaptations of Innovations. Austin: Research and Development Center for Teacher Education, University of Texas, 1978.
- HALL, Gene E., and Loucks, Susan F. "Teacher Concerns as a Basis for Facilitation and Personalizing Staff Development." In Staff Development: New Demands, New Realities, New Perspectives, pp. . Edited by Ann Lieberman and Lynne Miller. New York: Teachers College Press, 1979.
- HALL, Gene E.; Wallace, Richard C. Jr.; and Dossett, William F. A Developmental Conceptualization of the Adoption Process Within Educational Institutions. Austin: Research and Development Center for Teacher Education, University of Texas, 1973.
- HECK, Susan, and Goldstein, Marcia. Structured and Unstructured Approaches to Implementation: Whom Does the Shoe Fit? Austin: Research and Development Center for Teacher Education, University of Texas, 1980.
- HECK, Susan; Stiegelbauer, S. M.; Hall, G.E.; and Loucks, S. F. Measuring Innovation Configurations: Procedures and Applications. Austin: Research and Development Center for Teacher Education, University of Texas, 1981.
- LEITHWOOD, K. A.; Holmes, M.; and Montgomery, D. J. Helping Schools Change: Strategies Derived from Field Experience. Toronto: Ontario Institute for Studies in Education, 1979.
- LOUCKS, Susan F. An Exploration of Levels of Use of an Innovation and the Relationship to Student Achievement. Austin: Research and Development Center for Teacher Education, University of Texas, 1976.
- LOUCKS, Susan F., and Melle, Marge. Implementation of a District-Wide Science Curriculum: The Effects of a Three Year Effort. Austin: Research and Development Center for Teacher Education, University of Texas, 1980.
- LOUCKS, Susan F.; Newlove, Beulah, W.; and Hall, Gene E. Measuring Levels of Use of the Innovation: A Manual for Trainers, Interviewers, and Raters. Austin: Research and Development Center for Teacher Education, University of Texas, 1975.
- RUTHERFORD, William L., and George Archie. Affective and Behavioural Change in Individuals Involved in Innovation Implementation. Austin: Research and Development Center for Teacher Education, University of Texas, 1978.

APPENDIX A

INNOVATION DESCRIPTION: MANITOBA PROVINCIAL
K-6 SCIENCE CURRICULUM

App. A

INNOVATION DESCRIPTION: MANITOBA PROVINCIAL K-6 SCIENCE CURRICULUM

To be considered a user of the Manitoba Provincial K-6 Science Curriculum, an individual must be doing the essential components as a minimum.

- | | |
|-----------|---|
| ESSENTIAL | 1. Teach science on a regularly scheduled basis. |
| | 2. Plan instruction in blocks in advance. |
| | 3. Use the curriculum guide in the planning of science instruction. |
-
- | | | |
|------------|---------|--|
| COMPONENTS | RELATED | 4. Provide students with a variety of science experiences (learning activities) designed to facilitate concept and process development. "Concrete/hands-on" learning experiences are a regular feature of student activity. |
| | | 5. Evaluate student development (learning) in each instructional unit. |
| | RELATED | 6. Teach all units identified in the curriculum guide. |
| | | 7. Employ a variety of instructional techniques designed to promote student involvement and activity in concept and process development; i.e., techniques other than lecture, note giving, assigned reading, and worksheets. |

APPENDIX B

INNOVATION CONFIGURATION CHECKLIST: MANITOBA
PROVINCIAL K-6 SCIENCE CURRICULUM

App. B

I.D. _____

NAME: _____

Innovation Configuration Checklist:

Manitoba Provincial K-6 Science Curriculum*

Component 1. Materials Used For Instructional Planning

Variations

- _____ (1) A variety of materials including the curriculum guide; teacher's manual from Addison-Wesley Science; teacher's manual from other science programs such as Maps, Houghton-Mifflin, E.S.S., Science 5/13, etc.; and other materials.
- _____ (2) Curriculum guide plus teacher's manual from Addison-Wesley Science.
-
- _____ (3) Teacher's manual from Addison-Wesley Science.
- _____ (4) Curriculum guide plus teacher's manual and/or materials other than Addison-Wesley Science.
- _____ (5) Curriculum guide.
- _____ (6) Other materials.

Component 2. Materials and Resources Used for Instruction

Variations

- _____ (1) A wide variety of instructional materials and resources including concrete/hands-on material; community based or "out of classroom" resources; A/V materials such as slides, overhead projections, charts, graphs, pictures, filmstrips, films; texts; worksheet/dittosheet; reference materials.
-
- _____ (2) Concrete/hands-on materials plus two or more other types of materials.
- _____ (3) A variety of materials excluding concrete/hands-on materials.
- _____ (4) Primarily one type of material.

*Component Variations above interrupted line are ideal.

*Component Variations between solid and interrupted lines are acceptable.

*Component Variations below solid lines are unacceptable.

Component 3. Instructional Planning

Variations

- _____ (1) Plan teaching one unit at a time.
- _____ (2) Plan teaching generally one unit at a time; then specifically for a week at a time.
-
- _____ (3) Plan teaching for a week at a time.
- _____ (4) Plan teaching for one or two days at a time.

Component 4. Scheduling

Variations

- _____ (1) Science is taught on a regularly scheduled (distinct or integrated) basis with the following time specifications:
 - K-3 - more than 15 minutes/day or 75 minutes/cycle
 - 4-6 - more than 30 minutes/day or 150 minutes/cycle
 - 7-9 - more than 30 minutes/day or 150 minutes/cycle
-
- _____ (2) Science is taught on a regularly scheduled (distinct or integrated) basis with the following time specifications:
 - K-3 - 60-75 minutes/cycle
 - 4-6 - 90-150 minutes/cycle
 - 7-9 - 120-150 minutes/cycle
-
- _____ (3) Science is taught on a regularly scheduled (distinct or integrated) basis with the following time specifications:
 - K-3 - less than 60 minutes/cycle
 - 4-6 - less than 90 minutes/cycle
 - 7-9 - less than 120 minutes/cycle
- _____ (4) Science is not scheduled (distinct or integrated).

Component 5. Instructional Content

- _____ (1) Teach units from Addison-Wesley Science for the three themes identified in the curriculum guide plus additional enrichment/interest units.
-
- _____ (2) Teach units from Addison-Wesley Science for the three themes identified in the curriculum guide.
-

Component 5. Instructional Content (cont'd)

Variations

- _____ (3) Use Addison-Wesley Science but do not teach units for the three themes identified in the curriculum guide.
- _____ (4) Teach units from series other than Addison-Wesley Science for the three themes identified in the curriculum guide.
- _____ (5) Do not teach units in accordance with themes identified in the curriculum guide.

Component 6. Instructional Objectives

Variations

- _____ (1) Teach to objectives specified for each unit taught from Addison-Wesley Science or the curriculum guide.
- _____ (2) Select objectives from those specified in each unit from Addison-Wesley Science or the curriculum guide on the basis of perceived student needs.
-
- _____ (3) Select objectives from those specified in each unit taught from Addison-Wesley Science or the curriculum guide on the basis of teacher preference, interest, time considerations, etc.
- _____ (4) Teach to objectives from a source other than the curriculum guide or Addison-Wesley Science.
- _____ (5) Do not teach to objectives.
- _____ (6) Teach activities rather than to objectives.

Component 7. Student Activity

Variations

- _____ (1) Students are involved regularly and primarily in a wide variety of learning activities including concrete/hands-on experience followed by oral discussion and/or written reporting; discussions; group work; independent work; project and/or research work; experimentation.
-
- _____ (2) Students are involved regularly and primarily in a limited variety of learning activities (two or more different types) one of which is concrete/hands-on experience followed by oral discussion and/or written reporting.
-
- _____ (3) Students are involved primarily in activities such as reading assigned materials, completing assigned work/ditto sheets, attending to teacher demonstration.

Component 8. Evaluation Methods

Variations

- ☐ (1) Evaluate student learning using a variety of methods; some of which may be checklists, anecdotal observation and records, written and oral tests, task performance.

- ☐ (2) Evaluate student learning using two or more different methods.

- ☐ (3) Evaluate student learning using primarily one method.
- ☐ (4) Do not evaluate student learning.

Component 9. Evaluation Frequency

Variations

- ☐ (1) Evaluate student learning continuously or frequently throughout each unit.

- ☐ (2) Evaluate student learning at the end of each unit.

- ☐ (3) Evaluate student learning toward the end of each term.
- ☐ (4) Evaluate student learning toward year end.
- ☐ (5) Do not evaluate student learning.

Component 10. Evaluation Content

Variations

- ☐ (1) Evaluate student learning in terms of:
 - a) Knowledge of science content.
 - b) Application of science knowledge, principles and skills to problem-solving in new situations.
 - c) Development of science process skills.
- ☐ (2) Evaluate student learning in terms of two of the following:
 - a) Knowledge of science content.
 - b) Application of science knowledge, principles and skills to problem-solving in new situations.
 - c) Development of science process skills.

Component 10. Evaluation Content (Cont'd)

Variations

- _____ (3) Evaluate student learning in terms of one of the following:
 - a) Knowledge of science content.
 - b) Application of science knowledge, principles and skills to problem-solving in new situations.
 - c) Development of science process skills.
- _____ (4) Evaluate student learning in other areas.
- _____ (5) Do not evaluate student learning.

Component 11. General Instructional Techniques

Variations

- _____ (1) Primarily or frequently employ instructional techniques which require student activity and involvement. Such techniques may include discussion, group work, research or project work, student experimentation, student reporting, etc.

- _____ (2) Employ infrequently or on an irregular basis techniques which require student activity.

- _____ (3) Employ almost exclusively techniques which require student passivity. Such activities may include lecture, teacher demonstration, assigned questions based on lecture demonstration or reading, etc.

Component 12. Interaction Techniques

Variations

- _____ (1) Employ frequently a variety of discussion techniques such as redirecting, refocusing, clarifying, paraphrasing, etc., so as to broaden the scope of communication during science discussions.

- _____ (2) Employ frequently a limited number of discussion techniques.

- _____ (3) Employ discussion techniques infrequently or irregularly.
- _____ (4) Limit interaction to the asking and answering of specific questions, giving of directions, etc., so that most science-related communication is narrow in scope and/or from teacher to student.
- _____ (5) Limit interaction or discussion to non-science related topics.

APPENDIX C

INNOVATION CONFIGURATION CHECKLIST INTERVIEW SCHEDULE:
MANITOBA PROVINCIAL K-6 SCIENCE CURRICULUM

App. C
Manitoba Provincial K-6 Science Curriculum
Innovation Configuration Checklist Interview Schedule

The basic procedure followed for the interview is to initiate with an open ended question requiring a description of the interviewee's activity in regard to the innovation component; then, if necessary follow up with specific probe questions to elicit responses in relation to individual component variations.

Introduction

Do you presently teach Science using the Manitoba Provincial Science Curriculum? Briefly describe how you use the curriculum.

1. Scheduling of Science Instruction.

initial question: Please describe for me how you have time-tabled your science?

probes: Do you have science scheduled _____?

2. Materials and Resources Used for Instruction.

initial question: Please describe for me the kinds or types of materials your students use during science class.

probes: Do they use _____
What do they use most often?

3. Student Activity.

initial question: In a typical science class what do your students do? Briefly describe their activities during a typical class-from beginning to end.

probes: Would they _____
Which Activities do they do the most of? The next most?

4. Instructional Planning

initial question: How is your science instruction planned?

probes: Do you plan _____?

5. Materials Used for Instructional Planning

initial question: What materials do you use to help you plan your science program?

probes: Do you use _____?

6. Instructional Content.

initial question: Do you teach all the units in the curriculum guide?

probe: How do you decide which units to teach and which to leave out?

7. Instructional Objectives

initial question: In the units you teach do you cover all the objectives for that unit?

probes: Please explain.
How do you decide which objectives to teach?

8. Evaluation Methods

initial question: Describe for me what techniques you use to evaluate your students?

probes: Do you use _____?

9. Evaluation Frequency

initial question: When do you evaluate?

probes: Do you evaluate _____?

10. Evaluation Content

initial question: What do you evaluate your students on?

probes: Please explain how you do this evaluation.

or

Do you evaluate your students on _____?

How do you do this?

11. General Instructional Technique

initial question: Could you describe for me what you do as a teacher during your science classes. Briefly describe your activities during one of your classes from beginning to end.

probes: What do you do the most of? The least of?

12. Interaction Techniques

initial question: Do you have the opportunity for discussions during your science classes? Please describe one of these discussions for me? What happens?

probes: How do you manage to start these discussions? How do you keep these discussions going? What do you do with the kids who don't talk much?